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in snow-huts and tents, without fires, cheerfully enduring the most terrible climate imaginable." They are gradually coming under missionary influences, to their marked benefit.

It is pleasant to know from such authority that the eskimos of Labrador are living cleanly and under moral conditions, that they have elected elders who control quietly and effectively the whole community. Crime is practically unknown, and the success in banishing liquor-making is a notable instance of their power of self-government. Most persons will be surprised to learn that in literacy the eskimos of Labrador surpass the people of the United States, for, we are told, every eskimo child above twelve years of age can read and write. Every year an eskimo paper is published, and from time to time pamphlets, etc., in the native dialect. They are "a kindly, hospitable people, quick to anger and quick to forgive." The Moravian missionaries have wisely urged the continuance of native methods as to dress, customs and food.

Altogether these two volumes are among the most valuable that have appeared relative to American aborigines in several years.

A. W. GREELY

*Reminiscences of the Yukon.* By the Hon. STRATFORD TOLLEMACHE. Longmans, Green and Co. Illustrated. \$3.50 net.

*The Conquest of the Great Northwest.* By AGNES C. LAUT. New ed. 2 vols. in one. Moffat, Yard and Co.

The new and cheaper edition of the "Conquest of the Great Northwest" will be most acceptable to the many desirous of possessing this vividly told story of the Hudson Bay Company, with the preliminary voyages of Henry Hudson, and the rise of the opposition Northwest Company.

The passing of the Hudson Bay Company, and the supplanting of its fur-trade by the gold-seekers of the Yukon Valley, naturally transformed the economical and human history of northwest arctic America. Well told as it is, few now take special interest in the account of the Klondike rush in 1898, the up-building of Dawson, and the extension of

gold discoveries in adjacent regions. These events marked an epoch that has been told and retold in many scores of volumes.

Mr. Tollemache has, however, made a most acceptable addition to life in the Yukon in his reminiscences of eleven years of frontier existence. His experiences on the Pelly and McMillan rivers as a trapper cover a phase of frontier life of which little has been published. His accounts of the methods followed in trapping, and remarks on the game of the country—fish, fowl and beast—are contributions to an accurate knowledge of the natural history of the Yukon watershed that will be eagerly read.

Probably the most interesting chapter in the volume, certainly so to scientists, is that on color protection and big game, though a disappointingly small part is devoted to the color scheme. The account of the Indians is discouraging to the well-wishers of the aborigines, but doubtless correct in its general features. The illustrations are of interest in their presenting methods of trapping with which most general readers are unfamiliar.

A. W. GREELY

*Sewage Disposal.* By GEORGE W. FULLER. New York, McGraw-Hill Book Co. 1912. Pp. 767.

This book is, according to the author's preface, a resumé of the progress that has been made in this country during the last quarter century by one who has been intimately associated with the work. No one could be better qualified to write such a book than Mr. Fuller and no better book on the subject has been written. Its nearly eight hundred pages make a very formidable document, but the dismay of the reader will vanish when he discovers that the material is excellently arranged, clearly printed and paragraphed, and well indexed. Brevity has been sacrificed to clearness, and repetition has been employed for the sake of emphasis. The principal reason for the size of the book, however, is that the author has, as he says, drawn fully from the writings of others and from the professional papers and reports of the firm of

which he was so long a member. Some might have wished these quotations to have been abstracted and condensed, but most engineers will very much appreciate having so many important works set forth in such a convenient form for reference. While the author has quoted largely he has not failed to express his own ideas on most questions at issue. On matters of doubt he has set forth the arguments and opinions of experts on both sides.

Perhaps the most commendable feature of Mr. Fuller's book is his point of view. It is not a mere description of methods used for attempting to purify sewage, it is far broader than that. This is shown by the fact that fully half of the book is devoted to the composition of sewage, its decomposition, sewage bacteria and the disposal of sewage without treatment into inland streams, lakes and tidal estuaries. It is again shown by the use of the term "sewage treatment" in place of the misused and very misleading term "sewage purification." This change the reviewer heartily approves and believes that it alone will do much to place the matter of sewage disposal in the right light for those who are interested in the subject from a sanitary standpoint only. The sooner that the medical fraternity and the health officers realize the limitations in the sanitary efficiencies of some of the processes of treatment employed, the more rapid will be the rational development of the art. The point of view of the author is expressed by the opening words of the sixth chapter, where he says "the disposal of sewage by treatment in works of artificial construction becomes necessary in some cases through the failure of the dilution method to meet local requirements." And again in the last chapter, where he says: "One of the most conspicuous facts to be borne in mind is that there is no standard method of procedure for the treatment of sewage, which can be uniformly applied to a large number of problems with a view to securing satisfactory hygienic results at least cost. Various partial methods, arrangements or devices are suitable in some combination or another for a large number of problems. But there is no cure-all or appli-

ance which can be installed for all problems. Each set of local conditions should be carefully studied, in order to secure proper hygienic efficiency with due regard for economy of construction and operation, before new works are adopted, or extensions made to existing works."

Another good feature of the work is its historical point of view. The reader can not fail to be impressed with the fact that the art of sewage treatment has been a gradual evolution of methods to fit particular conditions and that there are yet many problems to be solved. Nor can he fail to observe how the advances in scientific thought in the realm of bacteriology and physical chemistry are profoundly affecting actual practise. An entire chapter is devoted to the development of experiment stations and a table is given showing that during the last twenty-five years nearly \$900,000 has been spent in this country for experimental studies relating to the purification of water and sewage. Especial tribute is paid to the pioneer researches of the Massachusetts State Board of Health Experiment Station at Lawrence. The historical aspect of the book is well shown in the treatment of the problem of sewage disposal in the harbors of Boston and New York.

It is probable that the first half of the book, in which the more general aspect of the disposal of sewage by dilution is considered, will be more appreciated by engineers than the second half, devoted to methods of treatment, for the reason that data regarding the former subject have never before been so thoroughly compiled. The layman, however, will derive benefit from the systematic descriptions of processes in the second half of the book.

To describe the book more specifically, there are twenty-six chapters, devoted to the following subjects: Composition of Sewage; Aerobic and Anaerobic Decomposition of Sewage; Sewage Bacteria as Related to Offensive Odors; Sewage Bacteria as Related to Public Water Supplies; Sewage as Related to Shellfish; the Problem of Sewage Disposal; Experimental Methods as Applied to Sewage Disposal Problems; Dilution in Inland

Streams; Dilution in Large Lakes; Dilution in Oceans and Tidal Estuaries; Sewage Treatment Works; Screening; Plain Sedimentation; Septicization in Connection with Sedimentation; Chemical Precipitation in Conjunction with Sedimentation; Electrolytic Treatment; Strainers, Slate Beds and Colloidors; Broad Irrigation; Intermittent Sand Filtration; Contact Filters; Sprinkling Filters; Aeration; Hypochlorite Treatment; Ozonization; Institutional and Residential Plants; Comparative Summary.

It will be noticed that some of the newer processes, such as ozonization, the use of electrolytically prepared hypochlorite, etc., are also gone into, but with reservations as to their probable utility. In the description of processes, emphasis has been placed on the underlying principles and on the efficiencies obtained by their application, while structures have been described only to a limited extent and the illustrations are relatively meager. The subject of cost is also one that has not been elaborated.

GEORGE C. WHIPPLE

#### SCIENTIFIC JOURNALS AND ARTICLES

THE contents of the *American Journal of Science* for July are:

"Storm King Crossing of the Hudson River, by the New Catskill Aqueduct, of New York City," J. F. Kemp.

"Lake Parinaochas and the Composition of its Water," G. S. Jamieson and H. Bingham.

"Shell Heaps of Maine," F. B. Loomis and D. B. Young.

"Mixtures of Amorphous Sulphur and Selenium as Immersion Media for the Determination of High Refractive Indices with the Microscope," H. E. Merwin and E. S. Larsen.

"Asymmetry in the Distribution of Secondary Cathode Rays produced by X-rays; and its Dependence on the Penetrating Power of the Exciting Rays," C. D. Cooksey.

"Derivation of the Fundamental Relations of Electrodynamics from those of Electrostatics," L. Page.

"Hydrolysis of Esters of Substituted Aliphatic Acids," W. A. Drushell.

"Some Suggested New Physiographic Terms," DeL. D. Cairnes.

THE following articles are printed in the *Journal of Genetics* for June:

"Species Hybrids of *Digitalis*," W. Neilson Jones.

"Notes on Inheritance of Color and other Characters in Pigeons," L. Doncaster.

"On Heterochromia Iridis in Man and Animals from the Genetic Point of View," C. J. Bond.

"Second Report on the Inheritance of Color in Pigeons, together with an Account of some Experiments on the Crossing of certain Races of Doves, with special reference to Sex-limited Inheritance," Richard Staples-Browne.

"Gigantism in *Primula sinensis*," Frederick Keeble.

#### RECENT WORK IN SYSTEMATIC AGROSTOLOGY

*Beiträge zur Gramineenflora von Misiones:* E. L. EKMAN (*Arkiv f. Botanik*, 11: no. 4. 1912).

The author visited for three months in 1907-08, Misiones, that portion of Argentina lying between Uruguay and Paraguay. The above article is a critical account of the grasses collected at this time. The author enumerates 125 species and gives a table showing the relation of these to the surrounding regions. The larger genera are *Panicum* 27 species (23 species as the genus is limited by Hitchcock and Chase), *Paspalum* 19 species and *Andropogon* 14 species (including *Sorghum*, *Sorghastrum* and *Heteropogon*). There are four beautiful plates, taken from photographs, by the gelatin process, and illustrating the inflorescence, the details of which are excellently shown. The work inspires confidence from the incorporation of numerous critical notes. It is interesting to note that the anomalous *Leptochloa spicata* is transferred to the genus *Tripogon*, a disposition which is well supported by evidence. The descriptions of new species are in Latin, the notes in German.

*The Grama Grasses:* DAVID GRIFFITHS (*Contr. Nat. Herb.*, 14: 343-428, 1912).

This was reviewed recently by Dr. Bessey<sup>a</sup>

<sup>a</sup> SCIENCE, April 12, 1912, p. 590.